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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/514,250	02/28/2000	Ho Young Choi	YHK-039	9403

7590

01/29/2003

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EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 01/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/514,250	CHOI ET AL.	
	Examiner	Art Unit	
	Audrey Y. Chang	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 and 44-60 is/are pending in the application.
- 4a) Of the above claim(s) 3,7,10,14-18 and 26-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6,8,9,11-13,19-25,38-40 and 44-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION*Remark*

- This Office Action is a *supplemental action* to the previous Office Action dated December 26, 2002.
- This Office Action is in response to applicant's amendment filed on October 15, 2002, which has been entered as paper number 21.
- By this amendment, the applicant has amended claims 1, 6-8, 13, 14, 16, 20, 21, 27-30, 45-47, 50-54 and 56 and has canceled claims 41-43.
- Claims 1-40, and 44-60 remain pending in this application.

Election/Restrictions

1. Applicant's election **with traverse** of species II (Figure 6) in Paper No. 21 is acknowledged. The traversal is on the ground(s) that applicant simply states that the species II (Figure 6) is generic to species I (Figure 3) and species III (Figure 10). This is not found persuasive because applicant fails to give logical reasons to explain why projection lens system having different number and structure of lens elements are generic to each other.

The requirement is still deemed proper and is therefore made **FINAL**.

2. The following claims read on the elected species II (Figure 6): claims 1-2, 4-6, 8-9, 11-13, 19-25, 38-40, and 44-60.
3. Claims 3, 7, 10, 14, 15-18, and 26-37 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 21.
4. The rejections to claims 45 and 50-51 under 35 USC 112, first paragraph, set forth in the previous Office Action are withdrawn.

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Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claims 47, 51, and 53 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

The phrase “which provides at least half of the refractive power” recited in the claims are confusing and in errors. It is not clear how does the refractive power is measured so that “half” of such power is defined.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 1, 4-5, 8, 11-12, 45-48, 50-54, 55-56, and 57-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Ogata (PN. 5,982,544).**

Ogata teaches a *lens system* that is comprised of a *plurality of lenses* (Figure 7) with an *aspherical lens* (the fifth lens from the object side) wherein a *diffractive optical element* is formed on the *aspherical lens*, (please see Figure 7 and column 11, lines 13-40). The diffractive optical element is designed to correct chromatic aberrations.

This reference teaches that the lens system is a zoom lens system but does not teach explicitly that is a projection lens system. However it is standard practice in the art to utilize a zoom lens system in a projection lens system. It therefore has been held that a recitation with respect to the manner in which a

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claimed apparatus is *intended to be employed* does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Madham, 2 USPQ2d 1647 (1987).

With regard to claims 4 and 11, Ogata teaches that the diffractive optical element has a positive refractive power, (please see Figure 1). With respect to claims 5 and 12, this reference does not teach explicitly that the diffractive optical element has a negative refractive power. However, since the specification fails to teach the criticality of having this negative power would overcome any problem in the prior art such modifications are considered to be obvious matters of design choice to one skilled in the art.

With regard to claims 45-46, 50 and 52, Ogata teaches that the aspherical lens is made of plastic and it is standard knowledge in the art that an aspherical lens will correct spherical aberration in the lens system. With regard to claims 48 and 54, Ogata teaches that various aberrations including astigmatism and distortion are corrected by the lens system.

With regard to claims 47, 51 and 53, Ogata teaches that the lens system has lens element made of glass but it does not teach explicitly that the half of the refractive power is provided by glass material. However such feature is not clearly defined and it cannot be examined in details. It is however well known in the art that diffractive optical element are general designed to correct the aberration caused by the glass material in the optics system.

With regard to claims 57-60, Ogata teaches that the pitch of the groove for the diffractive optical element may be changed across the element (Figure 2), although it does not teach explicitly about the change being increasing or decreasing as it moves from the center to peripheral, however it is known in the art that different design of the groove will give rise to different optical properties of the diffractive optical element and since the specification fails to teach the criticality of having particular design would overcome any problem in the prior art such modification is considered to be obvious matter of design choices to one skilled in the art.

9. Claims 1, 8, 44 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Chipper (PN. 5,493,441).

Chipper teaches a *lens system* that is comprised of a *plurality of lenses* (Figure 1) with an *aspherical lens* (1, Figure 1) wherein a *diffractive optical element* is formed *on the aspherical lens*, (please see Figure 1 and column 3, lines 60-64). The diffractive optical element is designed to correct chromatic aberrations. Chipper teaches that the front surface of the first lens is *spherical*.

This reference teaches that the lens system is a zoom lens system but does not teach explicitly that is a projection lens system. However it is standard practice in the art to utilize a zoom lens system in a projection lens system. It therefore has been held that a recitation with respect to the manner in which a claimed apparatus is *intended to be employed* does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Madham*, 2 USPQ2d 1647 (1987).

10. Claims 2, 6, 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Ogata as applied to claims 1 and 8 above, and further in view of the patent issued to Meyers et al (PN. 5801,889).

The lens system taught by **Ogata** as described for claims 1 and 8 above has met all the limitations of the claims. Ogata teaches that the diffractive optical element may have *ring* shape grooves that has rotational symmetry, (please see column 2, lines 35-25). However this reference does not teach explicitly that the diffractive optical element is formed on a spherical surface. **Meyers et al** in the same field of endeavor teach a diffractive optical element formed on an aspherical lens wherein the diffractive optical element is formed on a *spherical surface* (44, Figure 4). Meyers et al also teaches that the diffractive optical element having *rotationally symmetric grooves*. It would then have been obvious to one skilled in the art to apply the teachings of Meyers et al to form the diffractive optical element on the spherical

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surface of the aspherical lens for the benefit of providing a specific design for the diffractive aspherical lens.

11. Claims 19-25, 1 and 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Moskovich (PN. 4, 776,681) in view of the patent issued to Ogata (PN. 5,982,544).

Moskovich teaches a projection lens having a *first lens* with positive refractive power in the center and negative refractive power on the peripheral, a *second lens* of positive refractive power, and a *third lens* of positive refractive power lens and a *fourth lens* of negative refractive power, (please see Figure 3). Moskovich teaches that the surfaces of the first lens, third lens and the fourth lens may include *aspherical surfaces*, (please see Table X). This reference met all the limitations of the claims with exception that it does not teach to include a diffractive optical element. **Ogata** in the same filed of endeavor teaches to include a diffractive optical element that particularly can be formed on an aspherical lens to correct the aberrations of the lens system. Ogata teaches that the diffractive/aspherical lens may be made of plastic. It would then have been obvious to one skilled in the art to apply the teachings of Ogata to form a diffractive optical element on an aspherical lens of the lens system of Moskovich for the benefit of correcting the aberrations in the projection lens system.

Response to Arguments

12. Applicant's arguments filed on October 15, 2002 have been fully considered but they are not persuasive. The newly amended claims have been fully considered and they are rejected for the reasons stated above.

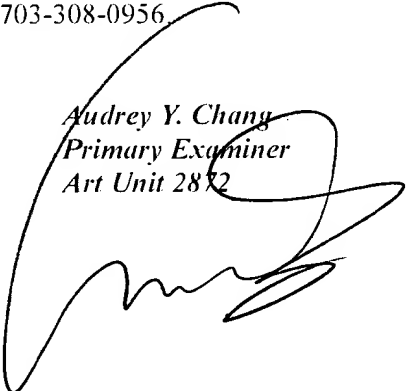
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Audrey Y. Chang
Primary Examiner
Art Unit 2872



A. Chang, Ph.D.
January 22, 2003